Exercise Sheet 2: Strings, Lists

Assignment 2.1: How do you create a string that removes the spaces at the front and the end of " to be or not to be " to give "to be or not to be"?

Assignment 2.2: How long is this string and how do you determine it? (Of course, don't count yourself, use a Python function!)

Assignment 2.3: How do you extract the last two characters (which in this case should result in the string "be") from the latter string?

Assignment 2.4: How do you replace this last "be" by "it"?

Assignment 2.5: Consider again the string "to be or not to be". What is an elegant way of replacing both substrings "to be" by "two beer"?

Hint: Use the help function of Python to find out about the methods for the string type *str*.

Assignment 2.6: Write a Python line that returns ***True*** if a given string begins with "to".

Assignment 2.7: How do you return the following element(s) of the list li = [1, 2, 3]?

1. the third element
2. the last element
3. the first two elements
4. the last two elements

Assignment 2.8: How do you append the integer 5 to the list ***li*** from above?

Assignment 2.9: How do you extend the list ***li*** by another list, say, [6,7,8]?

Hint: There are different ways of doing that. Try to find at least two.

Assignment 2.10: Consider the variables ***x*** and ***y*** which are set in Python to x = 1 and y = 2

Can you write a one-liner which makes them switch values?

Assignment 2.11: Write a code snipped that prints "big" if a variable x has a value larger than 100, and "small" if not.

Assignment 2.12: Consider the list money = [100, 200, 20, 50, 1, 10, 2, 5, 500]. Write a code snippet that

1. prints out all members of the list, in their order;
2. prints out all members of the list, but only if larger than 10;
3. Challenge: sorts the list and prints the sorted list in reverse.

Assignment 2.13: Challenge - The Collatz-Ulam sequence is defined as follows:

1. One starts with a positive integer x.
2. If x = 1, the sequence finishes.
3. If x is even, divide x by 2 and continue.
4. If x is odd, multiply x by 3, add 1 and continue.

Write a Python program that prints the Collatz-Ulam sequence for different starting values of a variable x. Try it out, e.g. for x=5, x=10, x=15.

Extra Challenge- What is the longest Collatz-Ulam sequence that you can find and from which x does it start?